

AVIATION

The Oldest American Aeronautical Magazine

AUGUST 9, 1926

Issued Weekly

PRICE 15 CENTS



Plane of the Hamilton Rice Expedition over the Amazon River, Brazil (see p. 258)

(cf. Walter Hinton)

VOLUME
XXI

SPECIAL FEATURES

THE CURTISS DURALUMIN TANK

HUFF DALAND PEGASUS

PRATT & WHITNEY ANNIVERSARY

NUMBER
6

GARDNER PUBLISHING CO., INC.
HIGHLAND, N. Y.

225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 29, 1920, at the Post Office, at Highland, N. Y.
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AVIATION

VOL. XXI

AUGUST 9, 1926

No. 6

Amateur Builders

Ease of Starting

EVERY FREE man aviation needs a letter from someone who speaks details and plans for a plane. The task he has laid himself. Consider the demand for a two-place sport plane and the writer states that he cannot afford to lay even a six-cylinder plane but that he has a certain mechanical ability and some leisure time and that, being enthusiastic about flying he wants to build a plane and learn to fly.

Because the day of the efficient modern plane which is built in quantity by the billions, the back yard builder had some chance of producing a plane which might be as good as other planes of the time. His product ran a chance of being successful only if he were an unusually skilled and experienced mechanic and if he had great courage and persistence. The present day amateur enthusiast has a chance of building a plane which is the equal of the planes of 1901 and 1912 but it will not be the equal of the modern plane or even of the war machine equipped.

It takes from 250 to 300 drawings to show every detail of even a small plane. Such drawings are extremely expensive to get up and reproduce and require a very considerable amount of engineering skill. If the plane built from the drawings is really successful the designer will want to build himself and as a result there are practically no drawings of successful planes available. Even with an excellent and complete set of drawings, an engineering department has to interpret them to the man in the shop. Even a very experienced mechanic could not follow the drawings for a modern plane and build the plane without running into trouble. Drawings must be made for a very simple airplane but, as the efficiency of the modern plane depends on the refinement of the detail design, it is doubtful if it would become even moderately satisfactory. There is also the further difficulty that practically every back yard builder has ideas in his own mind and consequently few drawings of the same model would be in demand.

Quite a few motor boats and sail boats are built by amateurs from drawings but here the detail and precision of the work is not as essential as in an airplane. No automobile is built by amateurs from blue prints furnished by others, though, in the early days, automobiles were built in all sorts of shapes and by men who were of necessity, more or less amateurs. The airplane, like the automobile, has passed the stage where it can be built by inexpensively inexperienced mechanics and set it as well as a modern machine. The enthusiast who wishes to produce an airplane should do better to buy a second-hand plane of some standard model and to build it, if he must, with care. He will not get as much experience and will not be getting a better product.

THERE WAS probably no improvement which popularized the use of automobiles more than the simplification. The automobile made traveling much easier and so compared to the results produced, the cranking of an automobile was not a difficult matter. While the self-starter was, therefore, regarded at first merely as a convenience, it is regarded now as a necessity. The self-starter for airplane engines will before long be regarded in the same light, especially as applied to planes for amateur users.

An amateur flying boat pilot recently noted that there were as many as fourteen motors necessary before his engine finally got under way. Gas and oil had to be stirred on, the carburetor choked, the throttle cranked, a change down in by turning the propeller, and the throttle advanced a little. The spark was then retarded, "cut out" was turned on and then an auxiliary burner cut. The propeller was then ready to be turned over. If the engine started on the first crank all that was necessary was to turn on both motors, turn off the burner and advance the throttle. The whole performance would have been ludicrous if there had not been some considerable danger to the pilot in turning over the prop and chocking in and out of the cockpit. Other planes are often simpler to start but turning over the propeller is always strenuous and dangerous. Even a head crank with cranks of large power is a waste and often a dirty job.

If planes are to be developed for the use of private owners, the worst convenience must be studied and among the most important matters is the question of getting the plane started easily and without the help of a mechanic to swing the prop. A head crank is part of every modern engine, but this is only a partial solution of the problem. The electric starter is excellent but a battery is a very heavy weight to carry around in any except the largest planes. The merits of dynamo starters were to offer possibilities but at present not too much money for small commercial planes. The French have come out with a variety of gas and compressed air starters which seem to work well enough, but are rather a nuisance to set up, install and keep in order. The solution of the problem is in a way not of fundamental importance, but it will add an element of convenience which will increase the use of airplanes just as it has increased the use of automobiles.

So lead planes the use of batteries on the wheels is of great value in making a plane easier to start. With battery there is no necessity for putting chains under the wheels and the pilot can swing up his motor without having to climb in and out of the cockpit. The motor also has the great advantage that it can be a help in take-off and climb, the pilot to start over in a cross wind and without moving his engine.

Repairing Duralumin Hulls and Pontoons

Fractures and Punctures in Duralumin May Be Repaired Effectively and With Great Facility.

CONSTANT TO the general opinion of aircraft operators of the difficulties encountered in the repair of duralumin flying boat hulls and pontoons, the procedure of repairing a damaged structure is considerably simple, and can be accomplished by any mechanic with practice, once they be made under a repairer's own hands and in position.

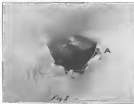
Obviously the hull or pontoon is made liable to damage before the repair has possibly by running against an under-keel, or by hitting a floating log while landing. Usually, the forward bottom of duralumin hulls and pontoons are of sufficient thickness to meet such severe strains, resulting in, perhaps, a dent in the skin which in no way affects the waterproofing of the structure, provided a stress line has been loosened. One case is particularly interesting in which an elevated hull struck the trolley on the ground in the process of landing and struck a man lower than on the side of the runway, leaving the starboard hull about two inches from the original position and seriously buckling the ribs and bottom sheets in the region of the land. The entire structural section and the machine was not withdrawn from service and although two men have passed, the best and buckled section of the hull has given no trouble either in water landing or on the ground. If, however, a hole is punched in a hull or pontoon sheet the methods of repair are quite simple and are described and illustrated in the following paragraphs.

Preparing For Repair

Fig. 1 shows a typical leak in a sheet caused by running against a sharp rock or log or something of that nature. It is a leak of this kind it is quite essential to examine the sheet in the region of the leak very carefully for cracks or tears extending from the edges of the opening, such as to avoid the photograph. When these have been noted, the sheet should be cut out sufficiently around the damaged area so that no cracks or tears remain in the sheet. It is advisable to cut away all of the metal that has been deformed or dented, but duralumin is so ductile that a highly resistant and difficult weld is encountered in removing the dented or deformed area. Furthermore, the working of the metal in removing the deformed area would make it more susceptible to corrosion. Thus the sheet is returned to its original condition. It is well to state that new landing operations on a deformed sheet, when it has not been flat treated, should be done only to keep it as safe as possible. Replacing the metal in its original state over a small surface is not actually overdone, it subjects

it to high load fatigue and leaves it in a condition not liable to meet stresses.

The cutting of the sheet must be done with the ordinary heavy shears, as in a riveted plate a heavier blade may be used to good advantage. It is quite advisable to file all edges smooth after cutting over the damaged portion of the sheet. As a matter of appearance, only, a round or square hole and



A typical metal patch position

patch is desirable, but the shape of the patch after it has been laid on the one with which the repair may be accomplished is not on the ability of the repair to meet fatigue. In **Fig. 2** is shown the damaged surface of the sheet after the hole has been cut out in the patch region.

The Finished Patch

Fig. 3 shows the repair patch riveted in place over the hole formed by cutting away the damaged section. The patch is cut from duralumin sheet one or two pieces larger than the damaged sheet. It is cut in the same shape in the hole in the sheet with an allowance of one half inch all around for spacing. The hole in the sheet is non-square or irregular in the shape of the patch. After the patch has been

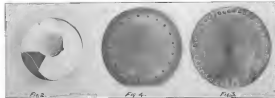


Fig. 2 shows the method of preparing the damaged portion of a metal portion for repair. **Fig. 3** shows the completed riveted patch. In **Fig. 4** is shown the method of securing over a wing repair metal without riveting.

REMEMBER — NATIONAL AIR RACES, SEPT. 4-11

not to shape the steel bar is worked and the rivet centered along with a center punch. In the repair job illustrated, rivets $\frac{1}{8}$ in. in diameter were used $\frac{1}{2}$ in. centers in rivets. The appended table indicates the proper rivet diameter and under the proper diameter is the correct thickness of sheeting.

After the rivet fasteners have been worked on the patch, it is placed on its correct location over the hole in the sheet and the rivet holes are drilled through the patch and the sheet together, a few inches, some being used to hold the patch in place the riveting. If an rivet set is available, the rivets may be placed down flat with a hammer. If a rivet set is available, the rivets may be driven down with the hammer and set to form the round rivet head. The rivets should be held loosely over the work with the rivet bar in hand while riveting. Both types of rivets are shown in the illustration and both are equally suitable for waterproofing, although the round head rivet presents a better appearance. As a waterproofing measure in general cases, however, it is advisable to cover all unworkable surfaces with lead before riveting.

A Temporary Repair

In **Fig. 4** is shown a method of temporary repair which may be utilized at points away from repair bases. The rivets naturally would have duralumin patch steel and non-corrosive materials secure and safe. The patch is made the same size for the repair just described, the main difference being that there is no additional patch on the rivet center but they would be more sheet, and the rivets to make duralumin between holes is then secured as in the rivet repair patch previously described. The machine is cut to show the three thicknesses of metal and rivets change the higher gauge sheet being in place between the two lower patch plates. The main rivet should be secured inside in the hole. The rivet patch plate only to a smaller plate, also and provide the machine and from riveting and designing the main sheet when the rivets are tightened up. This type of repair while less effective, is not considered too permanent and should be replaced with the riveted patch at the first opportunity.

By Part Data

The following table indicates the proper dimensions for fastening of rivets and sizes of rivets in different gauges of duralumin sheets for use in the repair patches.

Sheet	Rivet	Sheet	Rivet
1/8 in.	1/8 in.	1/4 in.	1/4 in.
3/16 in.	3/16 in.	5/16 in.	5/16 in.
1/2 in.	1/2 in.	3/4 in.	3/4 in.
5/8 in.	5/8 in.	1 in.	1 in.



The simple standard patch used by the Chicago Aeronautical Service for metal damaged during the major Chicago K-3 aerial races. The patch is larger K-3.

The Howard Flyabout

Designed, built and piloted by Dr. G. Howard, of Boston, Tex., the Howard Flyabout has just completed 3,000 miles flying under various conditions. This plane, although designed for cross country flights, is adaptable for landings, emergency, parked or sport flying. The machine is a two, with main side by side, dual control in a 14 ft wide cockpit. The plane is provided with tail and landing components.

The structure is of wood and wire construction, the engine mounting being of steel tube. The landing gear is of steel tube construction.



The Howard Flyabout (Curtis K-3)

The wing width is the single bay, higher type, landing on cross wheels. The wings are long and have four cross members under the support. The lower wings only have cross members in the wing construction is entirely as shown. Three main built up spars are used, with the use of the Western tube type.

The general specifications and performance figures are given in the table which follows are as follows:

Length	32 ft. 6 in.
Span	30 ft. 6 in.
Wing	25 ft.
Wing lower wing	11 ft. 6 in.
Chord upper and lower	7 ft.
Gap	3 ft. 11 in.
Stages	11 in.
Angle of incidence upper and lower wing	4 deg.
Incidence upper and lower wing	4 deg.
Span bank	1 deg.
Angle of tip and wings with tail on ground	1 deg.
Area of wing including incidence	773 sq. ft.
Area of ribbons	77 sq. ft.
Area of horizontal stabilizer	154 sq. ft.
Area of elevator	15 sq. ft.
Area of fin	15 sq. ft.
Area of rudder	125 sq. ft.
Wing and fuselage	328 sq. ft.
Wing and fin	408 sq. ft.
Total wing	736 sq. ft.
Wing lower wing	154 sq. ft.
Power loading	35 lb. sq. ft.
Wing loading	25 lb. sq. ft.
Wing span	27 m.p.h.
Wing span	36 m.p.h.
Chord in 2,000 ft. full load	4 m.p.h. 43 in.
Engine	Curtis 975

New Dornier Ambulance Plane

The Dornier ambulance plane, designed by F. H. Schuchman, Dornier, has just completed the construction of an ambulance plane of its design. It is a seven passenger plane. The interior is completely equipped to handle patients and it is capable of landing in fields and over rough terrain, together with the use of its skis.

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The Curtiss Duralumin Fuel Tank

A Fuel Tank Which Combines Lightweight With Strength and Overcomes Maintenance and Repair Troubles.

A NEW DURALUMIN fuel tank, which combines the best features of brass and aluminum tanks, has been developed by the Curtiss Aeroplane and Motor Company, and is an interesting example of advances in the art of aircraft engineering to keep pace with the increasing demand for better performance.

The manufacture of fuel and oil tanks for aircraft presents many problems of weight, cost, and maintenance. The study that has been given to these problems by Curtiss engineers is an example of the careful attention to detail that is characteristic of the Curtiss organization.

Materials For Tanks

Brass and template were the first materials to be used commonly in the construction of aircraft tanks. The selection of these materials was probably due to the fact that both were readily obtainable and could be easily worked. Soldered joints were used in brass tanks, and the finished product stood up well in service and was easy to repair in the field with an ordinary soldering iron. The one great disadvantage of tanks made of either brass or template was their excessive weight and this item was of such importance that the designers sought other materials which might eliminate this difficulty.

The next material to be used was aluminum, which, of course, is much lighter than brass or template. Liability to solder aluminum satisfactorily forced the use of a welded construction on these tanks. This type of construction was extremely difficult and expensive, and the appearance of the finished product was not highly satisfactory. In addition, service difficulties developed in reference to the welded joints. The tanks were heavy, took very long to repair, and repairs in the field were difficult—so that, almost impossible. In spite of these drawbacks, aluminum tanks have come to be extensively used in aircraft, solely because of their great weight advantage. It is interesting to note that possibly the first aluminum tank to be used in this country was those built by the Curtiss Company and installed in the XC-1, which, in 1915, made the first flight across the Atlantic, via the Azores.

Realizing that the ideal type of tank would be one which would combine the lightness of the aluminum type with the low cost and freedom from defects of the brass tank, the Curtiss Company set about to develop such a tank, and, after a great deal of research and experimentation, has produced

this duralumin tank. A special metal-plate process, developed by William F. Trivett, of Buffalo, N. Y., and of which Curtiss is the sole licensed licensee, makes possible the soldering of duralumin, the strength and light weight of which are well-known. Fused duralumin tanks, therefore, can be made by the same methods as brass tanks, which means ease and low cost of manufacture. They stand up well in service, standing up to corrosion with fuel, fire, acid, if damaged, can be repaired easily with an ordinary soldering iron. Combined with these advantages is the extremely low weight of the duralumin.

The importance of this weight saving can easily be seen when one realizes that on the Curtiss biplane pursuit plane, a saving of about 45 lb. has been realized by making the gasoline and oil tanks of duralumin instead of brass, and this saving would, of course, be increased in larger machines. Since the weight saved by the Hawk is 40 lb. per lb., the saving of 45 lb. means that 7 lb. has been released to do useful work in propelling the airplane.

Fused duralumin tanks have undergone all kinds of service tests for the past two years, and have shown up so satisfactorily that all tanks now being made by the Curtiss Company, including those for the U. S. Army and Navy Hawks and the Amer. Falcons, are of fused duralumin. These tanks are also being manufactured by the Curtiss Company for the trade.

Planes For Private Use

William H. Stout, head of the Airplane Division of the Ford Motor Company, has recently purchased a Verville biplane with Curtiss GV-5 engine, constructed by the Heli-Verville Airplane Company, of Detroit, Mich. Mr. Stout requires the airplane for his personal use.

Another interesting purchase for private use is that of Henry Bissell, who has also acquired an Avrocar equipped with a Verville V-500 200 hp. or more engine.

It will be recalled that the Verville biplane is a very small type of plane for private use. It is a three-seater and is equipped with dual control and Stinson wheels, with a broad expansion landing. Furthermore, the aircraft, which is essentially based on the Curtiss Cub, has folding wings which add versatility in the adaptability of the plane to private use.

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were not entered in the second annual **FORD RELIABILITY TOUR** because — public demand for these safe, reliable "**TRIMOTOR**" and "**UNIVERSAL**" planes has for the present exceeded production.

FOKKER "TRIMOTOR" ten passenger planes are flying twice daily from Philadelphia to Washington and return with passengers and U. S. Air Mail — **FOKKER "UNIVERSAL"** 5-passenger planes are carrying U. S. Mail daily between New York and Boston.

Among 1926 purchasers of **FOKKER** commercial craft are the U. S. Government — the Byrd Arctic Expedition — the Detroit Arctic Expedition — Continental Motors Corporation — Philadelphia Rapid Transit Company — Colonial Air Transport, Inc. — Edward Hubbard Airlines of Seattle — British Air Ministry — K. L. M. Air Lines — etc.

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The Heli-Tailor XLBI biplane (Packed 200 lb.)

The Huff Daland Bomber XLB-1

One of the Largest Single Engine Light Bombers in Existence.

DURING THE 1925 National Air Show held at Mitchell Field, L. I., N. Y., the Huff Daland light bomber XLB-1 made its first public appearance and it will be remembered, the plane won the Air Transport race. Until now the Army Air Corps has not provided any information concerning the plane in its published list but it is now possible to give some information relating to this very interesting single engine bomber, produced by Huff Daland Engineers, Inc.

Constructional Details

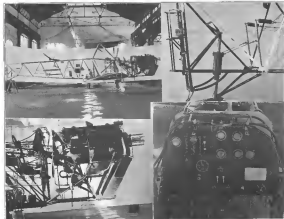
The *Pegeen*, designed by C. E. Peck, chief engineer of the Huff Daland Company, is one of the largest single engine bomber planes in existence and its speed and load carrying capacity are exceptional. Like other types of Huff Daland airplanes, such as the *Patrol*, *Wolver*, and the *Partridge*, the *Pegeen* has an aluminum fuselage of solid steel tube, constructed in one unit from the nose to the tail and involving the use of an air-braking wheelbarrow. The engine mounting for the *Patrol* 2A-2000, 500 hp water-cooled engine is similar, detachable together with the engine by the removal of four main bolts and its attachment of engine in service is rendered easily possible.

The wings of the *Pegeen* are of the standard Huff Daland *baton* type, apart construction, tapered in both plan form and in section and incorporating a single interplane bay. The main spar is situated in the center section of the upper wing between the main spar and the fuel supply is thus of the simple gravity type.

The undercarriage is of the split axle type and is especially interesting because of the unusual shock principle of absorption which is incorporated. The use of rubber is eliminated in both the undercarriage and tail wheel in favor of the standard type of spring also shock absorbing cylinders for each wheel with a single cylinder at the nose type for the tail wheel. Furthermore the tail wheel is steerable.

Crew and Loads Load

As previously mentioned, the power plant is the Packard 2A-2000, 500 hp engine and the drive is 16 to 1 propeller. The engine is of the ground type. The *Pegeen* carries a service crew of three, namely, pilot, bomber and observer, in addition to the machine gunner and the bomb loader. Attaching to it is a part of the Air Corps Emergency Division, by attaching larger loading wharves, can 54 in. by 32 in., (similar to those



Details of the Huff Daland Pegeen. Top left—The metal fuselage frame and wing roots at the Pegeen. Top, right—Tail and double shock absorbing air-braking shock absorber cylinders. Bottom left—The Packard installation with the standard engine. Bottom, right—A general view of the pilot's cockpit showing the instrument panel. Note the wire type Pegeen wheel attachment point on the left.



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Book Reviews

TRANSPORT AVIATION, by Archibald Black, Assistant Director
For Op. New York, MOG

With commercial air transportation increasing rapidly and now becoming a very definite and recognized means of travel, one of the greatest needs from the standpoint of the operator and engineer has been a complete and authoritative work dealing with all aspects of air transport and placing the whole subject on a sound and scientific basis for industrial purposes. This much needed plan has been filled by Archibald Black's new book, "Transport Aviation." Mr. Black, who has positioned as an experienced engineer for a long time, has written recent years given his whole time to air transportation and has studied every matter and the problems connected with the operation thereof, with the result that, very naturally, he has gained a vast point of air transport which is very sound. He has, accordingly, and with a keenness in this subject to the fullest extent as the preparation of his latest work.

In "Transport Aviation" it can be found the answer to every question which is likely to come in the course of air transport. For a new air transportation operator, it is a very complete and authoritative operation of airplanes commercially are fully and completely dealt with in "Transport Aviation." Undoubtedly, one of the most interesting chapters is that dealing with the collection of design and construction data. There, Mr. Black has very carefully gone into each factor in design and, with the aid of very intelligently sketched up curves, he shows how the one and the other factor will affect different aspects of flight.

The study of the chapter, in comparison with those on design of passenger and freight planes and not of much, however, will provide most valuable data and information for the designer of airplanes suitable for different classes of commercial work. The book is thus of great value to the airplane designer whether or not he is actually connected with a transport service. Another valuable chapter is that on airway and landing fields.

The book, which covers 245 pages and has 16 chapters, is very fully illustrated and has no less than 111 most valuable tables giving data on all aspects of air transportation. And, finally, and by no means least important, the book has a very well arranged and complete index, which enables quick reference to desired subjects. Mr. Black's work will fill a valuable place in every commercial engineer's library, in addition to its value in the actual air transport operator.

Two Valuable Books on Flight

At this time, when aviation is naturally bringing to its rights many new enthusiasts anxious to learn the art of flying both for their own enjoyment and in order that they may make use of the latest developments of science in the industrial and their individual business prosperity, the question of education becomes paramount, and, in fact, it always has been. That question is answered in two most valuable books always been recognized by those capable to judge and then is substantiated by statistics of the average time taken for a student of a good flying school to become adept in the art of flying.

To every new student of aviation, one of the greatest helps in gaining a preliminary grasp of the essentials of flying has been that book, "Aerobatics," by H. H. Hinkle, which, while it was published in its first edition during the War, is still as sound as the most modern of flying, and it was especially the content of an airplane of today, is no different from that of four years ago and, accordingly, in "Aerobatics" is found the correct approach to actual flying instruction that is possible on the paper. While the work has been brought up to date several times since its first publication, it is shortly to be revised again and, in its new form, it will undoubtedly be even more valuable to the student pilot. The book, which is published by E. M. McElroy and Co., of New York, and is illustrated by many excellent pictures, is written in simple style and presents in a very clear manner the typical lesson given by an instructor to his student in the air. There is little doubt

that a would-be pilot who carefully studies "Aerobatics" before actually taking his flying instruction, will be both a very much more satisfactory student from the standpoint of the instructor, and a more able and successful student from his own standpoint.

It is in this connection to learn of another book on aerobatics for the student which is by the same author in "Aerobatics." This book, "The Memory of the Flight Field," is, in fact, a new edition and modification of Mr. Hinkle's "The Aerobatics Review," which is perhaps the most careful work on aerobatics in theory and practice that has ever been published. The work follows through the elementary theory of the airplane in the simplest possible manner, while it is a most interesting review for engineering, for Mr. Hinkle, in the use of the old physics of aerobatics and is thoroughly well versed in the subject. As in the case of the former work "The Aerobatics Review," the new book is written in the form of a dialogue between a student and his instructor, and is written in a simple and easy to understand manner. It is a most interesting book and is highly recommended to every student of aviation who wishes to know something about his airplane without being compelled to enter in to the deep theories of flight.

The Cover Picture

The cover picture of this issue of AVIATION is of more than ordinary interest. It is a photograph of a Walter Engine, which will be remembered as the pilot of the NC-4 on its transatlantic flight, *Albatross*, over the Atlantic Ocean, as a member of the Hinkle's Air Force recently completed. Walter Engine and Capt. A. W. Brown captured over 1200 miles of transatlantic from the air. Over to the right and across main service, landing planes were, in many cases, as far as 50 to 100 miles apart. When unable to land, the three would land on a far more rugged and uncomfortable shore and landed to the sea and back to the sea and back to the sea.

Gifts to the Guggenheim Aeronautics School

The David Guggenheim School of Aeronautics, New York University, has received, as donations, a number of very valuable and useful books and equipment in aid of the Aeronautics Library and equipment of the school. These include:

A valuable collection of aeronautical magazines covering a period of the year, received from Albert P. Lawrence in aid of the Aeronautics Library and equipment of the school. A new and complete type of altimeter for use in ground and photographic work received from H. E. London on behalf of Langley Laboratory, Inc.

Our 100 valuable books dealing with technical aeronautics received from William Knight.

The authorities believe that these and other donations are an indication of a most encouraging interest taken by the industry in the development of aeronautical education, and they wish to express their deep thanks for the gifts.

Colonel Washington A. Roebbing

Col. Washington A. Roebbing, holder of the Brooklyn Bridge, and President of John A. Roebbing's Sons Co., Trusts, N.Y., died at his home at 1215 E. 10th St., New York, N.Y., on July 23, at the age of 70. He was a graduate of the Brooklyn Polytechnic Institute. Col. Roebbing succeeded his father as a leader of suspension bridges, also operating a factory at Pittsburgh for the manufacture of wire. After the death of the elder Roebbing, the factory was renamed as Trusts, and was one of the greatest manufacturers of aircraft wire, cork, struts, timbers and fuselages.

Eleven Years of Packard Pioneering in Aircraft Motor Development 1915-1926

Reputation

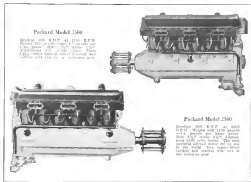
FOR MORE than a quarter century Packard has been building automobile and marine motors. For eleven years Packard has been building aircraft engines. It is not unusual that Packard should be today in the business of aircraft development—that Packard Aircraft Engines should enjoy an enviable reputation among those who design and build America's planes.

Year after year, as new types of planes have

been perfected and new power demands have arisen, Packard has met these demands—increasingly extended them—with the most advanced type of engine equipment. And such Packard Aircraft Engines have, in so many ways, reliable performance enhanced Packard's problem reputation.

On this page are pictured and described two Packard Aircraft models developed for ships falling within the range of 400 to 800 H. P.

PACKARD MOTOR CAR COMPANY DETROIT - MICHIGAN



Packard Model 1546

Displaces 500 C.U.D. at 1700 R.P.M.
H.P. at 1700 R.P.M. 400
Weight 1100 lbs.
Length 45 in.
Width 35 in.
Height 35 in.
Diameter 35 in.
Stroke 10 in.
Bore 5 in.
Crank 10 in.
Cylinder 10 in.
Crank 10 in.
Cylinder 10 in.
Crank 10 in.
Cylinder 10 in.

Packard Model 1580

Displaces 600 C.U.D. at 1900 R.P.M.
H.P. at 1900 R.P.M. 450
Weight 1200 lbs.
Length 45 in.
Width 35 in.
Height 35 in.
Diameter 35 in.
Stroke 10 in.
Bore 5 in.
Crank 10 in.
Cylinder 10 in.
Crank 10 in.
Cylinder 10 in.

ASK THE MAN WHO OWNS ONE

P. A. T. Inc. Well Equipped for Night Flying

In the week of AUGUST 12 it is expected that no particular delay will be caused on the planes at the Pacific Air Transport and that pilots will be able to return to their homes in the morning. The planes of the company, which are now in the hands of the flying staff, are absolutely without incident. Mr. F. H. of the Pacific Air Transport, has said in the following days to return through the company for night flying.

"We intend to use a plane in our office in the morning and a standard office for additional planes in the morning from two to four. All of our planes that will be used for night flying are equipped with landing lights, night wing instruments, and two portable flares. In other words, to have had Mr. Ryan, who manufacturing the plane in the morning for night flying, accompanied with a plane and up to date standard instruments in order to supply the needs for navigating through the air at night.

"We have about 100 miles of the lighting of the way between San Francisco and Los Angeles via Fresno and Tulare, which having installed landing lights and instruments to light the way at night. There will also be installed about 175 miles of wiring and of lights as we will have flights at 3:30 a. m. flying through. All of our pilots will be equipped with instruments, so that we are taking into consideration the possibility of making this flight with safety.

"Concerning the transportation of our service, it is hoped that we will be able to definitely meet the day before the end of August."

Polish Airplane Industry

The Polish airplane industry has been very much encouraged and supported by the Government to further progress. On the whole, however, the aviation industry here so far only been able to assemble a few aircraft from abroad. The planes of the Poles and Laskovska works in Lublin has

become numerous. So many accidents occurred with their planes that the transport of the flying staffs found it necessary to discontinue the flying efforts of the company and install a French expert. Meanwhile, the manufacturing industry is developing. The steel works in Upper Silesia are producing the necessary tools, the firm North-West, the firm Pannoski, the firm Laskovska, and the firm Laskovska, and the firm Laskovska, and a number of assembly plants produce up to 10 to 20 planes, each per month.

Commercial Aviation Renewed at Strasburg

The transport of the German and American planes has been renewed at Strasburg, Prussia, and now the air line has been made with Germany, and may go to be seen directly from Strasburg to Prague and stop at Nuremberg, Germany, in route.

If the present rate of exchange, the journey from Strasburg, to Prague, outside of Prussia, may be made more cheaply, to explain this in brief, if the cost of the journey is increased. For example, the journey from Strasburg to Warsaw would cost \$40 by airplane and \$50 by train. The time required for the journey, days included, is, at most, for less than the actual flying time by train.

There is one departure daily for Strasburg at 8:30 a. m. and for Prague at 7:30 p. m., in each case one half hour later than the arrival from Prague and Paris respectively.

The road commission, that is, the shipper, is an item Strasburg are not suitable parts, like from Laskovska, and will be made to be used in the air line to be used in the following dimensions: 40 by 40 by 40 in., or 30 by 30 in. (width and depth together). The planes, which are in the air line, are changed in the air at one day, and additional features of the rate of 500 m. The weight of a package is limited to 50 kg. The travel is limited for gold, silver, and precious articles, and undamaged for food, tools, and goods, and the like. All of these provisions articles and papers must be marked.

Wece Dealers for Ohio and Kentucky

The Embury-Ridley Co., Inc., of New York, Airport, Cincinnati, Ohio, dealers for Wece airplanes, announce the following Wece dealers for Kentucky and Ohio:

Robert H. Hunt, 1700 Windsor Pl., Louisville, Ky.; Johnson Airport and Supply Co., Dayton, Ohio; Columbia Aircraft Service, Columbus, Ohio; Southern Aviation Co., Birmingham, Ohio; Geo. Weidmann, The Embury-Ridley Co., Indianapolis, Ohio.

Mr. Hughes Embury, president of the Embury-Ridley Co., is a Cincinnati business man and an enthusiastic fan and deeply interested in increasing the Civilian Commercial Airplane Industry. Due to this in Cincinnati this year. The organization of the company will handle all the details connected with the visiting plane.

One of the entries in the reliability test will be a Wece equipped with 1st by. These engines, owned by Mr. Talbot Embury, member of the company's president. Mr. Embury is also an aviation enthusiast and will be a passenger in last year's plane on the test. The plane will be joined by Lt. John Paul Ridley, junior partner of the firm of Embury-Ridley Co., Inc.

Tariff Agreement on European Air Shipments

The official text of a tariff agreement for air shipments entered into by France, Great Britain and Belgium, has been published as a secret since of the Federal Journal Official.

Under the terms of the agreement, which was signed by the countries concerned on May 3, at Paris, air cargo shipped in commercial airplanes between the three countries must be handled with the following documents:

For passengers, a full set of names, sex, nationality, a statement of the whereabouts and of the previous on board the plane, as well as the total price declaration established by the shippers.



One of the most interesting exhibits was in the Bureau of Standards, Washington, D. C., the first and original Liberty engine, which under the terms of the agreement, was shipped by J. G. Foster and E. J. Hall in a closed freight car ship. The first engine was produced by the Federal Motor Car Co.



READY FOR DELIVERY:

Two new OXS AIRSTERS, equipped with Folding Wings and Dual Control, \$4,100 at Packard Field, Detroit, Mich.

One OXS AIRSTER Demonstrator, in first class condition, equipped with Folding Wings, Dual Control and Metal Propeller, \$3,000 at Packard Field, Detroit, Mich.

BUHL-VERVILLE AIRCRAFT CO.

2720 Scotland Avenue Detroit, Michigan

Learn to Fly

\$100 — Including Solo

No bond required
No charge for baggage

70 Students Graduated in 1935

First years without an accident

Rever and board near
field at \$10.00 per week.

We guarantee to give you absolute mastery of the wonder of flying when received. We also furnish planes as easy as possible to use for those who wish to study the art of flying and to experience the joy of flying.

The Best school of the Robertson Aircraft Corporation is one of the oldest and best known in the United States. Our instructors are expert aviators and are well known with the experience and the best of the best. The first year of the school is a complete course in flying, and the second year is a complete course in flying.

The first year is a complete course in flying, and the second year is a complete course in flying. The first year is a complete course in flying, and the second year is a complete course in flying.

We are now making short, low flights over the field and after the completion of the course of the art we are asked only two questions. One is a complete course in flying. The other is a complete course in flying.

It is not necessary to practice in flying in order to take this course.

WRITE FOR BROCHURE

Guaranteed Condition Airplanes, Ready for Immediate Fly-Away Delivery, at Prices Ranging from \$650.00 to \$1,750.00

ROBERTSON AIRCRAFT CORPORATION

OPERATORS OF ST. LOUIS-CHICAGO UNITED STATES AIR MAIL

LAMBERT-ST. LOUIS FLYING FIELD, ANGLIM, MO.

maneuver as the will take it in South America and start a revolution.

On the night of July 12 and pilot W. L. Smith landed here on account of impossible weather at Cleveland. He was forced to lay over here until the next morning before the weather should cleared up enough for him to go on.

Five students are being taught to fly by the Cramer Flying Service at present and two of these students from previous years have been taking advanced flying.

On July 13, a burst of rain forced them to leave. A truck, a road contractor, who found it necessary to make a last-minute trip to the State Highway Department of The State Highway Department. A plane was ready immediately, and with "Risky" Cramer piloting it, the trip was made in 1 to 30 minutes. Mr. Cramer transacted his business and the return trip was made that afternoon.

Commercial pilot Hainsworth operates a field near Altoona, Pa., found himself in need of some parts for one of his planes. As he figured it would take too much time to have them shipped to him, he got into one of his other planes and flew, got the parts, and returned to Altoona the same afternoon.

Floyd J. Logan Purchases Erickson Stock

The entire stock of the Erickson Aircraft, Ltd., of Toronto, Ont., consisting of 1025 and Cessna planes and general aviation supplies, has been purchased by Floyd J. Logan, owner of the Logan Aviation Co., of Cleveland, Ohio. This is the third large purchase of airplane stock by Mr. Logan within a year, the equipment of the De Luxe planes of Ashbury Park, N.Y., having been acquired the latter part of 1933, and that of the Aircraft Material & Equipment Corp. about six months ago.

Prior to acquiring the airplane industry, Mr. Logan was a distributor of automobiles in the Northwest. His new operations are of the oldest supply houses in the continental industry, and is constantly enlarging and making purchases to care for the increasing business every year.

Memphis, Mo.

By Lee R. Dyer

All small towns should establish their municipal landing fields. This is conclusively proven by the fact we have here. Quia a few have asked how the one was secured here, hence a brief outline of the plan. A suitable field was rented as close as possible. This is preferred, which reduces the real charge, the stock is on way interferes with the use of the field for flying. A small corner of the field should be fenced off for parking the planes as the stock cannot get near them. The larger should be placed in this manner.

Your local newspaper club, or any other organization, should be approached as the securing of the field and be responsible for the cost. If a successful thing were to be held, you could get enough one reason for the one or enough publicity for your city to make the advertising effort well worth the cost. The best plan was used to the one of the above mentioned field. The merchants here have been there pleased with the results, and next year promise to be one of it still greater extent.

The good people of the community are leaders for flying. Whenever a rumor comes to town they are taken out to the field as one of the special attractions. Instantly they are told that they should take a "trip" while they were a good chance. Just the other day a third was given a trip in the local ship. Like said it was "just fine and would not have missed it for anything." Of course we who are honest individuals, just what kind of a job our totally blind would get out of an airplane ride. But there used to be more to it than we all do.

Who the students to enjoy a good field although they are compelled to use one of the nearest adjoining fields for practice landings. Edna Cramer, of Syracuse, N.Y., has come home after 35 to 40 miles. Everett Bolander at Lyons, Ore., and Harold Phillips, Downing, Mo., successfully passed the P.A.T. test last week.

August 9, 1935

AVIATION

265

St. Graham and Mike Monroney stopped off for the night while taking their way from Troy, Ohio to their home in Oklahoma.

Frankie Garrison of Mexico City, stopped for gas while enroute from Oklahoma. They were thankful for having a good field available on their way home.

Memphis Airport

The Memphis Airport is the oldest and municipal landing field of Memphis, Tenn., being officially R.R. 1 by U. S. Army Air Corps officials. It is located about six miles South of Memphis at Woodstock, Tenn. It is a very good field and from the city, as it is known as the East by the Illinois Central Railroad and on the West by the great majority. The houses and other buildings are present within so as to be a landmark for visiting fliers. The field itself is 2,000 ft. long East and West, and 1,000 ft. North and South, as the shape of a cross divided a 100 acre tract of land. The runway is 100 ft. wide. There is a large system to be replaced at a recent cost, a constant and a 100 ft. and 100 ft. runway. The Memphis Airport is the result of the merging efforts of the Memphis Area Club which is composed of many fliers. After looking for several months for a favorable location, the field finally being accepted, and with the help of the Shelby County officials the club has graded and worked the field and it is one of the best in the entire South. The surrounding country fields are very extensive, directly across the U. S. R. R. tracks is the old cross-country field of the U. S. Government during the war.

The Memphis Airport is the home of the Memphis Airport Club, which is the largest flying club in the South. The club has a large number of members, and is a very active organization, directly across the U. S. R. R. tracks is the old cross-country field of the U. S. Government during the war.

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The transportation facilities to and from the city are very good as there is a bus line which gives timely service to

and the I. C. railroad has regular trains, running to and out of the City.

Tampa Airport, Fla.

By R. F. Dyer

The Tampa Aeromarine Association has accomplished two of the big things that it started out to do. The rapid progress made in the Tampa Airport in the last sixty days, puts it far beyond anything in the South, besides to O. H. Powers, president of the Tampa Aeromarine Association and R. W. Whitson, secretary of the City Commission, for the airport now containing 240 acres. The airport is about five miles from the center of the city and is a good highway. Mr. Powers and Mr. Whitson deserve a great deal of credit for securing a landing field as good as the present one position to be.

The Tampa Aeromarine Association was first formed in the mind of O. H. Powers, on Nov. 11, 1931. He, with George W. Mahall, at once started to work. They gathered around themselves all of the concerned people of these organizations. With this as a nucleus, the bylaws of the Tampa Aeromarine Association were drawn up. This small body was now formed by about fifty of the most progressive business men in the city who wanted for over a year, with patience, before their beliefs began to bear fruit.

At the regular monthly meeting in October, 1933, the Air Mail Commission, which consisted of Mr. Elmer E. Bennett (the Post Master of the City of Tampa), as Chairman, R. W. Whitson and O. H. Powers, announced that they were to have an air mail service between Miami, Fort Myers, Jacksonville and Tampa. At the next meeting R. W. Whitson, Dyer, chairman of the Airport and the Aeromarine Association, along H. L. Blum and Judge Dickinson, told the Association of the Airport being under the membership of the Association by this time had been in over 100, thus establishing the Tampa Aeromarine Association as a field and in the community.

The Tampa Board of Trade is now representing a Bureau of Aviation, Carl D. Dyer is chairman of this bureau.

The American Eagle A-1

A better commercial and sport airplane than has ever been offered on the American market at or near its price.

It is not a ship built to a price but built of the best quality and workmanship obtainable.

It is built by fliers and designers who know the wants and needs of both commercial aviators and sportsmen.

Its performance is wonderful; its finish and appearance are exceptional.

More than fifty fliers, army, commercial and air mail pilots, have flown the first American Eagle, and those who are not interested in some other make of airplane pronounce it the best 90 H. P. plane they have ever flown.

The American Eagle will surprise you.

Write for booklet.

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2510 E. 90TH ST.



RYAN M-1 **\$2890 to \$8400**

Superior Performance with
Super-Rhone, Curtiss OX5, Hispano-Suiza and Wright Whirlwind

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"The Plane That Pays A Profit"

**THE CURTISS PULITZER RACING PLANE
ARE EQUIPPED WITH
OUR SHOCK ABSORBER CORD**

Proven in the Transportation of Radio Cars for
Black Shocks in the Country

Proven Producers of Cord for Cessna and
U. S. Government during the World War

Fully Equipped for the Largest Requirements in
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PIGMENTED DOPES
VARNISHES ENAMELS

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Contractors to U. S. Government

The Curtiss "Hawk" Series



FOR PURSUIT TRAINING
WITH THE 180 H.P. WRIGHT MOTOR



FOR PURSUIT FIGHTING
WITH THE 440 H.P. CURTISS D-12 MOTOR

The Curtiss "Hawk" pursuit aeroplane is now available to the Army Air Service as an advanced training machine, with the 180 H.P. Wright E-2 motor substituted for the regular 440 H.P. Curtiss D-12 motor. Except for this power-plant change, the entire ship is identical with the regular P-1 "Hawk".

This new combination, which is known as the AT-4, has resulted in a machine that is peculiarly well-fitted for advanced training purposes.

ECONOMY: The installation of a 180 H.P. motor, quantities of which are in stock, make possible substantial reductions in initial and operating costs.

SERVICEABILITY: Several years of service development on the "Hawk" series by the Service Personnel and Curtiss Engineers have resulted in a machine that approaches perfection in its care and maintenance.

The AT-4 incorporates all of these improvements and is a type already familiar to the Service.

PERFORMANCE: The AT-4 has a high speed in excess of 130 m.p.h., a ceiling of over 15,000 feet with manoeuvrability similar to the P-1, acknowledged the most manoeuvrable ship in the world.

But the AT-4 is more than a training plane. The entire power-plant can be detached by the removal of four taper pins, and a regular D-12 power-plant substituted. Thus, in time of emergency, the AT-4 can be instantly converted into a standard P-1 "Hawk", ready to take its place in our first line of national defense.

The Navy advanced training problem can be similarly solved by the use of the 200 H.P. Wright J-5 motor in the Navy type of the "Hawk" seaplane.

**THE CURTISS AEROPLANE
CLINTON AVE.**



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